

CLAIMS

What is claimed is:

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1. A transmitter comprising:

a voltage-controlled oscillator having an operating frequency; and

10 an antenna, said antenna forming part of tuned circuit coupled to the voltage-controlled oscillator, a resonance point of said tuned circuit being automatically tuned to the operating frequency of the voltage-controlled oscillator.

15 2. The transmitter of Claim 1, wherein the voltage-controlled oscillator is coupled serially with a phase detector and a loop filter to form a phase-locked loop.

20 3. The transmitter of Claim 2, wherein the phase detector is further coupled to a reference signal so that the operating frequency of the voltage controlled oscillator is related to the frequency of the reference signal.

25 4. The transmitter of Claim 1, wherein a power amplifier is coupled between the voltage controlled oscillator and the antenna.

30 5. The transmitter of Claim 4, wherein the gain of the power amplifier is controlled by a power controller.

6. The transmitter of Claim 5, wherein the power amplifier, the voltage-control oscillator, and the

power controller are formed on a single integrated circuit.

7. The transmitter of Claim 2, wherein the phase-  
5 locked loop further includes a prescalar and a divide-  
by M circuit coupled between the oscillator and the  
phase detector.

8. The transmitter of Claim 7, wherein the voltage  
10 controlled oscillator and the phase-locked loop are  
formed on a single integrated circuit.

9. The transmitter of Claim 1, wherein the tuned  
circuit includes a differential structure of varactor  
15 diodes for tuning the resonance point of the antenna to  
the frequency of the oscillator.

10. The transmitter of Claim 9, wherein the varactor  
diodes include an array of capacitors that can be  
20 switched in and out of the tuned circuit.

11. The transmitter of Claim 9, wherein the  
differential structure of varactor diodes and the  
voltage-controlled oscillator are formed on a single  
25 integrated circuit.

12. The transmitter of Claim 9, further including a  
varactor Charge pump to provide a bias Charge for  
varactor diodes in the differential structure of  
30 varactor diodes.

13. The transmitter of Claim 12, wherein the  
differential structure of varactor diodes, the voltage-

controlled oscillator, and the varactor charge pump are formed on a single integrated circuit.

14. The transmitter of Claim 2, further including a  
5 reference oscillator supplying a signal of a reference frequency to the phase detector, wherein the reference oscillator, the voltage controlled oscillator, and the phase-locked loop are formed on a single integrated circuit.

15. The transmitter of Claim 14, wherein the reference oscillator is of the Colpitts variety and is coupled to receive a signal from a timing device external to the single integrated circuit.

16. The transmitter of Claim 1, further including a charge pump supplying a voltage to the voltage-controlled oscillator, wherein the charge pump and the voltage-controlled oscillator are formed on a single  
20 integrated circuit.

17. The transmitter of Claim 1, further including a bandgap reference circuit generating reference voltages that are temperature and supply voltage stable, the  
25 bandgap reference circuit and the voltage-controlled oscillator formed on a single integrated circuit.

18. The transmitter of Claim 1, further including a shutdown mode circuit coupled to the oscillator, the  
30 shutdown mode circuit and the voltage-controlled oscillator being formed on a single integrated circuit.

19. The transmitter of Claim 1, further including a data encoder coupled between a data input pad and the oscillator, the data encoder and the voltage-controlled oscillator being formed on a single integrated circuit.

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20. A method of transmitting, comprising:

generating an oscillating frequency with an oscillator within a phase-locked-loop;

modulating said oscillating frequency to create a modulated signal;

coupling the modulated signal to an antenna, said antenna forming part of a resonant network with the oscillator; and

automatically tuning a resonant point of said resonant network to the oscillating frequency.

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